

CLAIMS

1. A honeycomb structure comprising a plurality of cells, each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a plugging material at one end face, remaining cells being plugged by the plugging material at the other end face, wherein a Young's modulus of the plugging material is lower than that of the cell wall.
2. The honeycomb structure according to claim 1, wherein a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.
3. The honeycomb structure according to claim 1, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.
4. The honeycomb structure according to any of claims 1 to 3, wherein the porosity of the cell wall is 46% or more.
5. The honeycomb structure according to any of claims 1 to 4, wherein a thickness of the cell wall is 400 μ m or less.
6. The honeycomb structure according to any of claims 1 to 5, wherein a material for the cell wall is porous ceramic.
7. The honeycomb structure according to any of claims 1 to 6, wherein the plugging material comprises silicon carbide.
8. The honeycomb structure according to any of claims 1 to 7, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns at the end-faces.
9. A honeycomb structure comprising a plurality of cells,

each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a plugging material at one end face, remaining cells being plugged by the plugging material at the other end face,
5 wherein a strength of the plugging material is lower than that of the cell wall.

10. The honeycomb structure according to claim 9, wherein a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.

10 11. The honeycomb structure according to claim 9, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.

12. The honeycomb structure according to any of claims 9 to 11, wherein the porosity of the cell wall is 46% or more.

15 13. The honeycomb structure according to any of claims 9 to 12, wherein a thickness of the cell wall is 400 μ m or less.

14. The honeycomb structure according to any of claims 9 to 13, wherein a material for the cell wall is porous
20 ceramic.

15. The honeycomb structure according to any of claims 9 to 14, wherein the plugging material comprises silicon carbide.

16. The honeycomb structure according to any of claims 9
25 to 15, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns at the end faces.

17. A honeycomb structure comprising a plurality of cells,

each cell being surrounded by cell walls and functioning as a fluid passage, predetermined cells being plugged by a plugging material at one end face, remaining cells being plugged by the plugging material at the other end face,

5 wherein a porosity of the plugging material is 97% or more with respect to a porosity of the cell wall.

18. The honeycomb structure according to claim 17, wherein a porosity of the plugging material is 105% or more with respect to a porosity of the cell wall.

10 19. The honeycomb structure according to claim 17 or 18, wherein the porosity of the cell wall is 46% or more.

20. The honeycomb structure according to any of claims 17 to 19, wherein a thickness of the cell wall is $400\mu\text{m}$ or less.

15 21. The honeycomb structure according to any of claims 17 to 20, wherein a material for the cell wall is porous ceramic.

22. The honeycomb structure according to any of claims 17 to 21, wherein the plugging material comprises silicon
20 carbide.

23. The honeycomb structure according to any of claims 17 to 22, wherein the predetermined cells plugged at one end face and the remaining cells plugged at the other end face are arranged alternately so as to form checkerboard patterns
25 at the end faces.